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ABSTRACT

In Taiwan, technological and vocational education (TVE) the equivalent of career and technical education in the United States has undergone several political and social changes and is poised for applying school-based curriculum development (SBCD). Three reasons for adopting SBCD are planning of an integrated curriculum, concept of student-centered teaching, and catalyst for establishing a new school with certain educational objectives or directions. Three SBCD models are the situational analysis of Skilbeck's (1974) model that forms a useful foundation for deciding educational objectives; a model that emphasizes student analysis to determine students' needs as the basis for curriculum development; and a model in which stages, subsequent steps, and related major tasks are laid out for easy implementation and evaluation. Strategies for implementing SBCD in the Taiwan involve the integrative curriculum planning in TVE and the consideration of SBCD variations. Some factors crucial to SBCD in Taiwan are SBCD model selection, organizational changes in schools, teacher's professional development in SBCD knowledge and skills, creation of a climate for SBCD, and constant evaluation of SBCD. (Contains 12 references and 5 figures.) (YLB)

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School-Based Curriculum Development in Career and Technical Education in Taiwan, Republic of China

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Abstract

In many countries school-based curriculum development (SBCD) basically represents a move away from detailed, centrally imposed curricular decision making handed down to the school and teacher towards more responsibility for the individual school and teacher. Career and technical education in Taiwan has undergone several political and social changes and therefore is poised for applying SBCD.

This paper addresses the background of SBCD in Taiwan, the rationale for adopting SBCD, an overview of SBCD models, strategies for implementing SBCD, and conclusions. It is also concluded that some factors crucial to SBCD in Taiwan include SBCD model selection, organizational changes in schools, teacher's professional development in SBCD knowledge and skills, creation of a climate for SBCD, and constant evaluation of SBCD.

Key Words: school-based curriculum development, career and technical education, integrative curriculum planning

In Taiwan, Republic of China, technological and vocational education has undergone several technological, economic, social, and educational changes. These changes have necessitated the reform of Technological and Vocational Education (TVE), which is the equivalent of career and technical education in the United States.

Curriculum development represents a vital reaction to the reform. Several curriculum development trends were observed by Lee and Chou (1997): incorporating job training with advanced further study, exhibiting a tendency toward despecialization and academics, relying on new technology to modernize subject matter, emphasizing feedback mechanism for curriculum development, and finally promoting school-based curriculum development. Among these trends, school-based curriculum development in career and technical schools has played an crucial role in integrating different courses and programs, articulating programs at various levels, responding to the needs of students' career development and teacher autonomy, and allocating teaching resources for a consistent and integrated curriculum in career and technical education. In order to fulfill the educational objectives of career and technical education at different levels, and still maintain flexibility and accountability, it is imperative to incorporate all the stages of SBCD including planning, design, implementation and evaluation of the curriculum. This paper describes the background of SBCD in Taiwan, the rationale for adopting SBCD, an overview of SBCD models, strategies for implementing SBCD, and conclusions.

Background of the SBCD in Taiwan

The TVE system in Taiwan encompasses three levels: vocational high schools, junior colleges of technology, and colleges/universities of technology. In the 2000-2001 academic year, a total of 1,039,854 students enrolled in TVE schools, representing 55.4 % of the total number of students in both upper-secondary and postsecondary schools. Of these, there are188 vocational high schools, 23 junior colleges of technology, and 62 colleges/universities of technology. Among the TVE students, there are 168,306 students enrolled in colleges/ universities of technology, 444,182 students enrolled in junior colleges (including 187,007 students in 5-year colleges, 257,171 students in 2-year colleges, and 4 students in a 3-year college), and 427,366 students in vocational high schools (see Figure 1) (Ministry of Education, 2001).

At the secondary level, a structural change in the Taiwan economy resulted in three curriculum revisions in 1964, 1974, and 1985 respectively. The first two were mainly unit-trade training curricula while the third converted unit-trade training curriculum into cluster vocational education curriculum. In 1998, a fourth curriculum

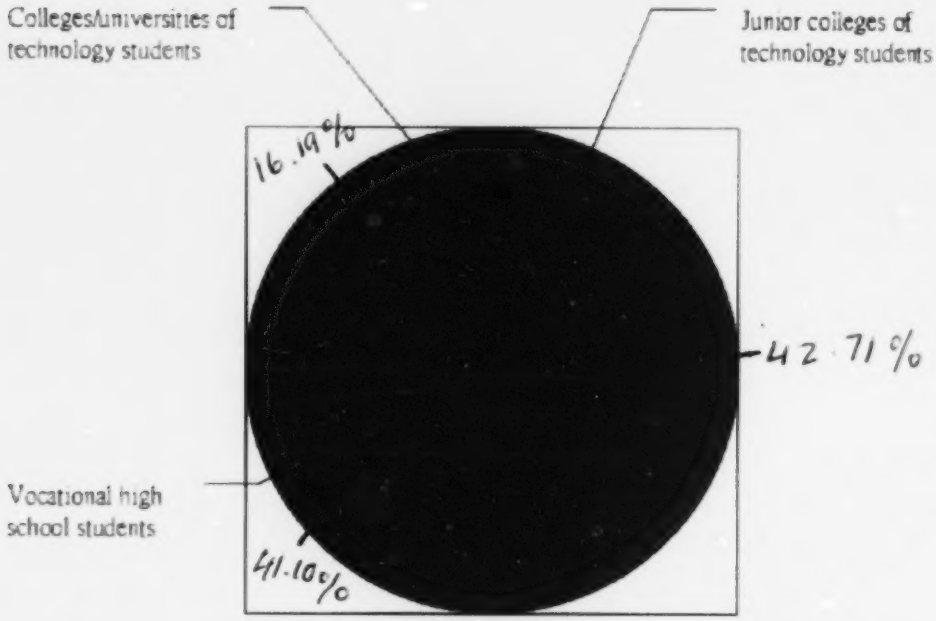

Figure 1. Percentages of students at different levels of TVE in the 2000-2001 academic year.
Source: Ministry of education (2001).

revision entailed new dimensions of educational philosophy, which emphasized meeting the individual needs of students, and stressing other abilities such as creativity, problem-solving, human relations, and basic academic ability to better develop students' overall potential in addition to their skill development (Wu, 2000a). The shift in objectives forms a conducive climate for planning SBCD at secondary vocational schools because schools can acquire legal and administrative autonomy and professional authority, thus enabling them to manage their own curriculum development.

At the postsecondary level, junior colleges of technology and colleges/universities of technology have enjoyed a high degree of autonomy in developing curriculum. However, the faculties of these schools have lacked full understanding of the concepts of curriculum development and congruence, and the resulting has remained questionable.

To avoid inconsistency and incongruence in the TVE curricula across various programs, occupational fields, and educational levels, well articulated curriculum should be set up, especially since TVE system has already been established and well structured. (Wu, 2000b). As a whole, TVE needs to take a systematic approach to plan the curriculum and at the same time to adopt appropriate strategies to assure its success.

Rationale for Adopting SBCD

During the past three decades, the ministry of education has revised and promulgated the curriculum standards for vocational high schools and junior colleges approximately once every ten years. The curriculum revisions have always been criticized as being a top-down and administration centered approach, with little consideration of the societal changes, and students' career expectations. In practice, the standards only serve for the purpose of curriculum planning, textbook compilation, and administering school entrance examinations.

The TVE system, however, operates through the three levels of education including vocational high schools, junior colleges of technology, and colleges/universities of technology. Inconsistency and overlaps in course contents, and curricula among programs, occupational fields, and educational levels ultimately undermine the students' quality of life, and their potential for employment and continuing education, thus contributing to the first reason for SBCD in Taiwan. Therefore, the planning of an integrated curriculum in TVE has become a priority in the priority agenda.

The quality of TVE mainly pertains to the students' ability to adjust to their school life, and their potential for employment and continuing education. These abilities are necessary for smooth transitions from school to work, from school to society, and from school to school. Centralized curriculum development process has long been criticized as in consistent, incongruent, nonsystematic and nondemocratic. Prompt and continuous curriculum development process should be installed to improve the quality of TVE. Possible measures include alternative ways of recruiting students, the establishment of curriculum development procedures and organizing agencies, program reviewing mechanisms, and SBCD. SBCD is a student-centered curriculum development approach. In SBCD, schools and teachers share the power, responsibilities, and control of curriculum development with education authorities to devise curriculum, which meets the needs of students, parents, communities, schools, teachers, employers, and society. Therefore, SBCD can be a key in solving the problem of curriculum inconsistency by incorporating the efforts of school staff and community.

The second reason for adopting SBCD is the concept of student-centered teaching. The curriculum should constitute valuable experiences developed cooperatively by the teacher and the learner through a close and sympathetic understanding of the learner's needs and characteristics (OECD, 1979). Furthermore, a curriculum should allow each school to engage in the complex transactions with the

environment, and its ideas, resources, and people through a network of communication systems as contingent upon reasonable freedom for a school to respond rather than merely adjust uncritically to the demands of the complex transactions. Therefore, in addition to the school, SBCD should involve all interested bodies comprising schools, central development agencies, regional centers, and local educational authorities to achieve optimal results.

Finally, SBCD could become a catalyst for establishing a new school with certain educational objectives or directions. The OECD's (1979) definition of SBCD implies a dynamic equilibrium between the school and its surrounding structures. The curriculum design and organizational change are simply two means to respond to knowledge progression or the changing educational demands of the society in the system. In order to bring new directions to the school these two means become critical and determinant factors in establishing the school's unique educational objectives. Since SBCD is a consistently effective method of designing a curriculum, it can serve the function of revamping career and technical education.

An Overview of SBCD Models

In many countries, centralized curriculum development has given way to SBCD. Three related SBCD models are worth mentioning. They are intended as guidelines for developing the school-based curriculum.

The first SBCD model delineates curriculum development process with objectives (Skilbeck, 1974). The model describes the planned changes, including situational analysis, goal formulation, program building, interpretation and implementation, and monitoring, feedback, assessment and consolidation (see Figure 2). In the first stage, situational analysis, an analysis of the change situation is reviewed to examine the external and internal related factors. External factors may include parental expectations, employer requirements, and community values while internal factors include teacher attitudes and skills, students' abilities, school expectations, and material resources. In the second stage, after considering the situational change, the school's goals should be changed in terms of preferences, values, and judgments about the future educational directions. In the third stage, after the program is built, according to the newly formulated goals, the school needs to define staff roles, specify the means and materials, and design teaching facilities. The next stage, "interpretation and implementation", requires a review of past experience, relevant theory and researches, and imaginative forecasting for the purpose of installing the program. The last stage includes the design of monitoring and communication systems, the evaluation process, and consolidation plan.

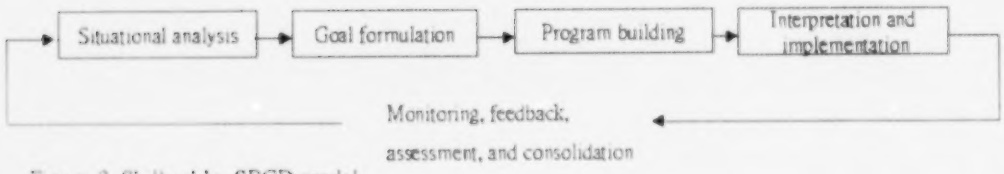

Figure 2. Skilbeck's SBCD model

Source: Skilbeck (1974).

Skilbeck (1974) proposed the above model with the aim of providing a logical order for curriculum development. However, in using this model, he suggested that all the stages might well be carried along at the same time. However, curriculum developers are encouraged to look into all the aspects of the process, and work in a more systematic way. Furthermore, effective SBCD depends on full and joint participations at all levels in the curriculum development process.

The second model focuses on the students. Students are first analyzed in their presumed ability, social background, and attained achievements. Resources and constraints are then considered. These consist of factors such as the number of teachers; their experience, knowledge, and ability; the amount of administrative support; available AV materials; funds for buying materials and equipments; external restrictions; time-table flexibility; potential resources; and possible reaction from others. The next step frames curriculum objectives in a philosophical way (general objectives). Specific objectives then delineate the ability and attitude of the students by the end of the learning process. "Methods and means" is a key stage in which possible alternatives should be considered in reference to the previous stages. Following the "methods and means" stage is student assessment. Assessment techniques and purposes, and explanation and presentation of assessment results should be considered. The practical operation of a school, such as the allocation of time, accommodation, and staff resources, include timetable, space, staff, materials, and timing and arrangement of staff meetings. Finally, the model requires an implementation plan, an evaluation system, and feedback mechanisms.

In practice, the school administration should fully support the curriculum development teams by helping them acquire necessary resources and encouraging full range of participation by all relevant parties in the curriculum development process. Outside help from experts and the community can especially facilitate the process by providing expertise, materials, and design.

Third, in Taiwan, a group of vocational curriculum developers designed a theoretical and practical model for SBCD. The process in the model includes stages in preparation, strategic curriculum design, teaching plans, implementations, and

evaluation. The model specifies the participants and their roles (Lin, Wong, Hwang, Yang, & Lee, 1999). Wu and Chang (2000) further revised the model to include stages in planning, design, development, implementation, and evaluation to correspond with the curriculum development model devised by Finch and Curnkilton (1989). The Taiwan model consists of stages, steps within each stage, and major tasks involved in each stage.

The steps within each stage refer to the details of current educational structure, environment, competencies and objectives, curriculum articulation, and curriculum design, implementation and evaluation. By consulting all the details in the model, schools and teachers can easily follow the procedure and refer to it as a checklist for developing a school-based curriculum.

In summary, the situational analysis of Skilbeck's (1974) model forms a useful foundation for deciding educational objectives. The OECD's model emphasizes student analysis to determine students' needs as the basis for curriculum development. In the third model, stages, subsequent steps, and related major tasks are laid out for easy implementation and evaluation. Combining all the strengths of these models in a sequential and systematic procedure will facilitate the success of curriculum development.

Strategies for Implementing SBCD

Strategies for implementing SBCD in the Taiwan context involve the integrative curriculum planning in TVE and the consideration of SBCD variations. Details regarding these two strategies are described in the following discussions.

Integrative curriculum planning in TVE requires occupational clusters or program families for further identifying core courses and program specific courses for national curriculum development. Seventeen occupational clusters have been identified to accommodate graduates from various programs at different levels. For each occupational cluster, there is a group of core courses at different levels. In general, schools can develop their own curricula by incorporating the core courses into the appropriate corresponding curriculum. Individual curriculum standards are in existence at colleges/universities of technology. On the other hand, the government still provides national curriculum standards for secondary schools to follow, with the core courses of each occupational cluster as required courses in the curriculum. Figure 3 indicates the flow of the curriculum development steps for TVE schools. Colleges/ universities of technology simply apply the core courses in their curriculum as a reference and implement the aforementioned third SBCD approach. In contrast, junior colleges of technology and secondary vocational schools are required to comply with the national curriculum standards.

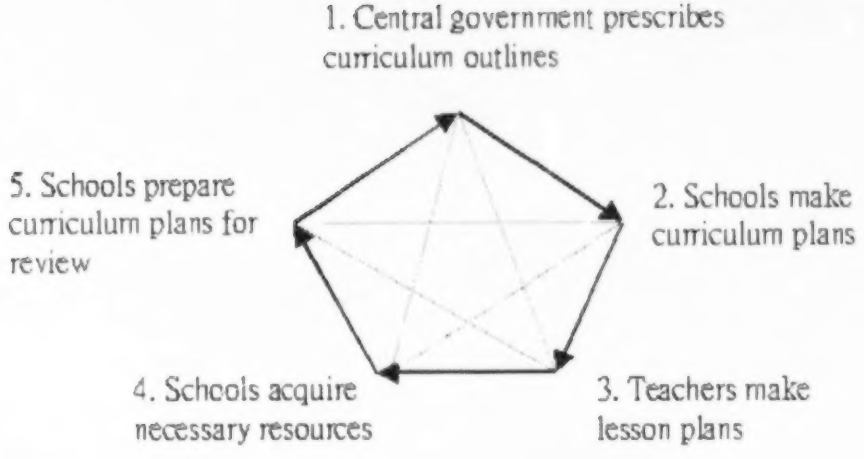
1. Central government prescribes curriculum outlines
2. Schools make curriculum plans
3. Teachers make lesson plans
4. Schools acquire necessary resources
5. Schools prepare curriculum plans for review

Figure 3. Responsibility areas of schools versus educational administration and the procedure.
Sources: Lee (1999).

In order to comply with the national curriculum standards, vocational high schools and junior colleges of technology are required to submit curriculum plans for review by the Ministry of Education (see Figure 4). Currently, the required core courses prescribed by the Ministry of Education represent 40 to 85 percent of the graduation credits. Therefore, at least 15 to 60 percent of the offered credits are at the discretion of the schools. Permitting vocational high schools and junior colleges of technology more curriculum autonomy will be a trend. Vocational high schools should follow the concepts and suggestions of the SBCD approach in their management of the 15 to 60 percent school-based courses and adjust to the changing environment of society and students' needs. Sufficient resources, administrative support, in-service training, time flexibility, and parental and community assistance, and funds are among those important influencing factors.

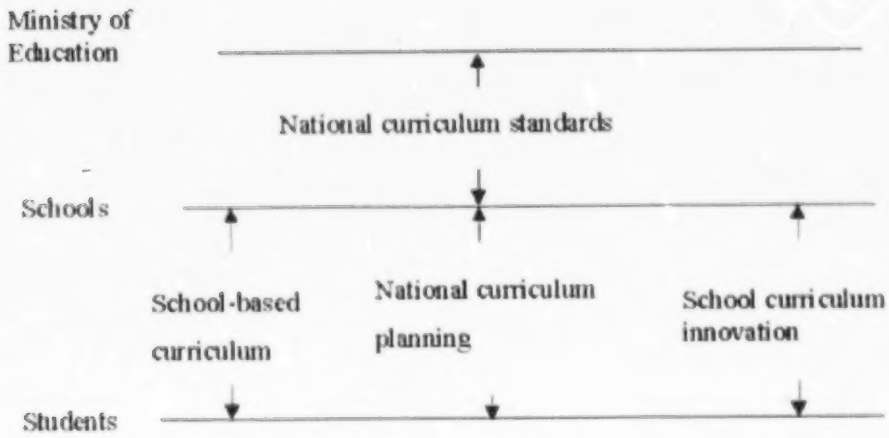

Figure 4. The cooperation in TVE curriculum development between educational authorities and schools.

Source: Lee (2001).

In considering the SBCD variations, a matrix of SBCD is worth mentioning. Originally, a matrix of SBCD (see Figure 5) is proposed to define SBCD and its variations (Marsh, Day, Hannay, & McCutcheon, 1990). Nevertheless, the matrix can also classify SBCD according to the types of activities (creation, adaptation, selection, and investigation), persons involved (individual teachers, small groups of teachers, whole staff, teachers, parents, students) and time commitment (one-off activity, short-term plan, medium-term plan, and long-term plan). Within a permissible limit, teachers can evaluate their needs and constraints, and adopt an appropriate SBCD activity to improve their teaching and effectiveness, and the students' learning achievement. The type of activity is dependent on the motivation of teachers to invest their time in SBCD. In Taiwan, teachers are encouraged to actively participate in the SBCD activities by working on the planning, design, implementation, and evaluation of a program on students' learning at schools.

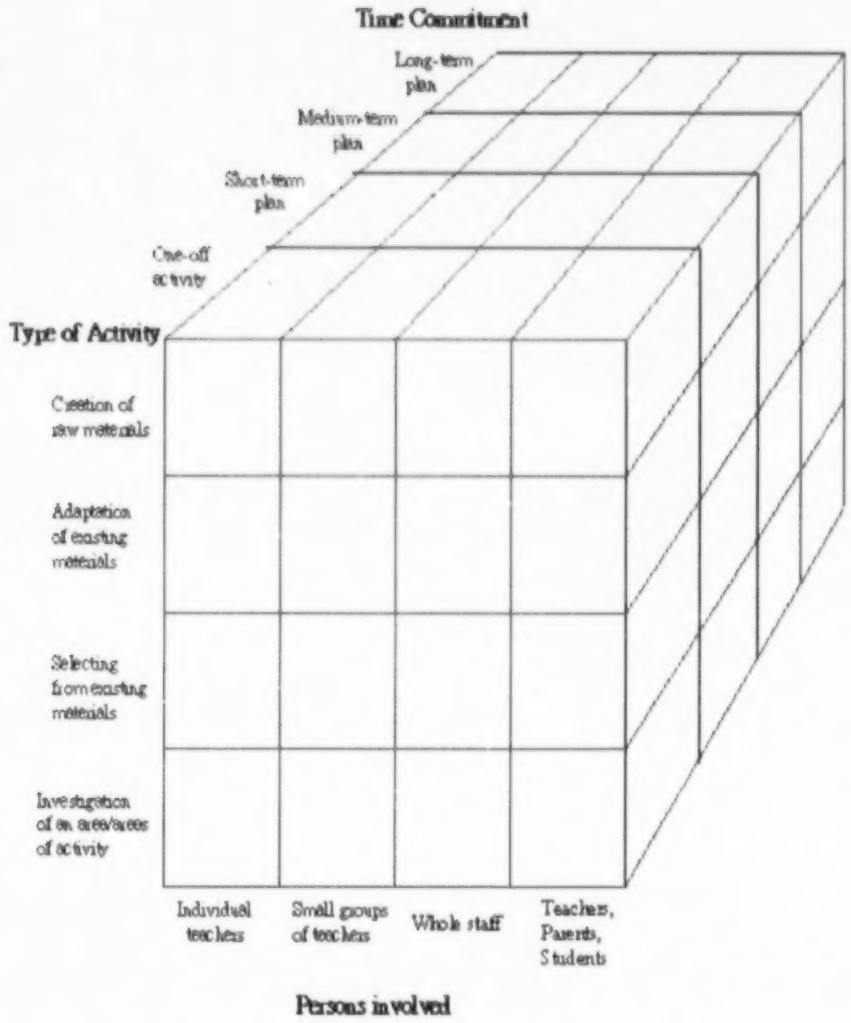

Figure 5. A matrix of SBCD variations.
Sources: Marsh, Day, Hannay, & McCutcheon, (1990).

Conclusions

SBCD in career and technical schools really play an important role in integrating different courses and programs, articulating programs at various levels, responding to the needs of students' career development and teacher autonomy, and allocating all the teaching resources for a consistent and integrated curriculum in career and technical education. Especially after the establishment of the technological and vocational education system, including vocational high schools, junior colleges of technology, and colleges/universities of technology, it is crucial to develop a systematic and comprehensive scheme that combines the curricula at different levels

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SBCD is adopted as a major vehicle to accomplish the goal.

Unlike in the past, in order to avoid the inconsistency and incongruence of the curricula, some critical influencing factors are observed, including SBCD model selection, organizational change in schools, teachers' professional development in SBCD knowledge and skills, creation of a climate for SBCD, and the constant evolution of SBCD. The success of SBCD relies heavily upon the attention to these factors in the curriculum development process.

The selection of the SBCD models is a priority. Although three models have been reviewed in this paper, and the local model is designed for easy implementation and evaluation in Taiwan, schools adopting SBCD should carefully examine their environments and make the selection. Since all the three models have their own strengths and weaknesses, it is the school and teacher's responsibility to select and design the most feasible model for application.

Organizational changes are inherent in the SBCD process because the definition of SBCD indicates any process which would bring about a redistribution of authority, responsibilities, and control between central and local educational authorities, with schools acquiring legal and administration autonomy and professional authority which enable them to manage their own curriculum development. Any proposed organizational changes in schools may represent a threat to the normal life of teachers and principles. In order to facilitate the change, curriculum developers should have time flexibility, conflict resolution ability, communication skills, statements of clear objectives and exceptions, and evaluation of the curriculum development.

In SBCD, the teachers' professional development in SBCD knowledge and skills are as important as organizational change. Teachers may be well versed in instructional skills but have little experience in working cooperatively with others in small groups. Major areas of development include task-oriented, interpersonal, and subject area focus skills. Teachers involved in the SBCD process should actively develop their own professional skills in order to be capable of assuming the responsibilities of the school-based curriculum. It is important that the teacher should be a curriculum developer as well.

Creating a climate conducive to SBCD is essential in implementing SBCD. Group cohesion and some problem-solving approaches can be used to create and maintain high levels of staff support and collegiality. These ongoing activities can break down individualism and establish new organizational structures that enable SBCD to prosper.

Constant evaluations of SBCD as an integral part of the SBCD system is logically sound. By postulating the sequential stages in SBCD models, evaluation should take the form of multi-evaluation, including both formative and summative

evaluation to assess the success of SBCD. If the results of evaluation prove the success of SBCD, then it is easier to describe the benefits of SBCD to all the participants in SBCD projects.

In conclusion, educators not only need to examine the above factors, which facilitate SBCD, but also eliminate those factors, which impede it in order to establish an ongoing curriculum innovation system. Constant improvement is the key to success in the process.

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